



PZMIV & PZMTIV

Precision Zoom Stereo Microscopes

www.wpiinc.com

INSTRUCTION MANUAL

Serial No. _____

072105

World Precision Instruments



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Introduction

WPI's **PZMiv** stereomicroscope is an ideal tool for tissue dissection, cell injection, specimen manipulation, electrode inspection and many other applications requiring a magnified stereo view and ample working distance. It offers quality and performance at an affordable price. Advanced optics provide image sharpness found only among the best of this class.

PZMiv uses modular, parallel-beam path design and a high quality optical system. The advanced optical design with plan achromatic objectives provides sharp and distortion-free image throughout the entire zoom range. The ergonomic design makes it easy to use — zooming is smooth and effortless, controlled by a large spring-loaded knob.

With an extensive array of optional accessories, **PZMiv** is suitable for almost any bio-research application requiring a stereomicroscope.



Unpacking and Set-Up

- 1.** Remove the microscope from the case and check that the following parts are all present and undamaged:

Microscope Head

WFH 10x Wide-Field Eyepieces (two)

Paired Eyeguards (two)

Ring Light Adapter

Track Stand

- 2.** Assemble the track stand.
- 3.** Mount the microscope head into the focus mount.
- 4.** Remove the protective cap on the bottom of the microscope head.
- 5.** Refer to the parts diagram on page 3, and follow the set-up instructions below.
- 6.** Install the WFH 10x eyepiece pair ① included. The paired eyeguards can now be attached to the eyepieces.
- 7.** The exact working distance is found by adjusting the focusing knob ⑦.
- 8.** When the optional stands are used instead of the standard base, see System Diagram on page 4 for mounting instructions.



Key

- ① Eyepiece
- ② Diopter Adjustment Ring
- ③ Magnification Indicating Ring

Above the right-hand knob (hidden in this photo) is a detent control to provide discreet zoom stops or continuous zooming.

- ④ Magnification Knob
- ⑤ Body Rotation Clamp Locking Screw

- ⑥ Stage Plate
- ⑦ Focusing Knob

- ⑧ Track
- ⑨ Base

PZMTIV only:

- ⑩ CCD Color Video Camera (optional)
- ⑪ C-Mount CCD Camera Coupler (optional)
- ⑫ Video/Photo Port
- ⑬ Light Path Selector Bar — *when out, light to the right eyepiece is switched to the photo port.*

Parts Diagram for PZMIV and PZMTIV

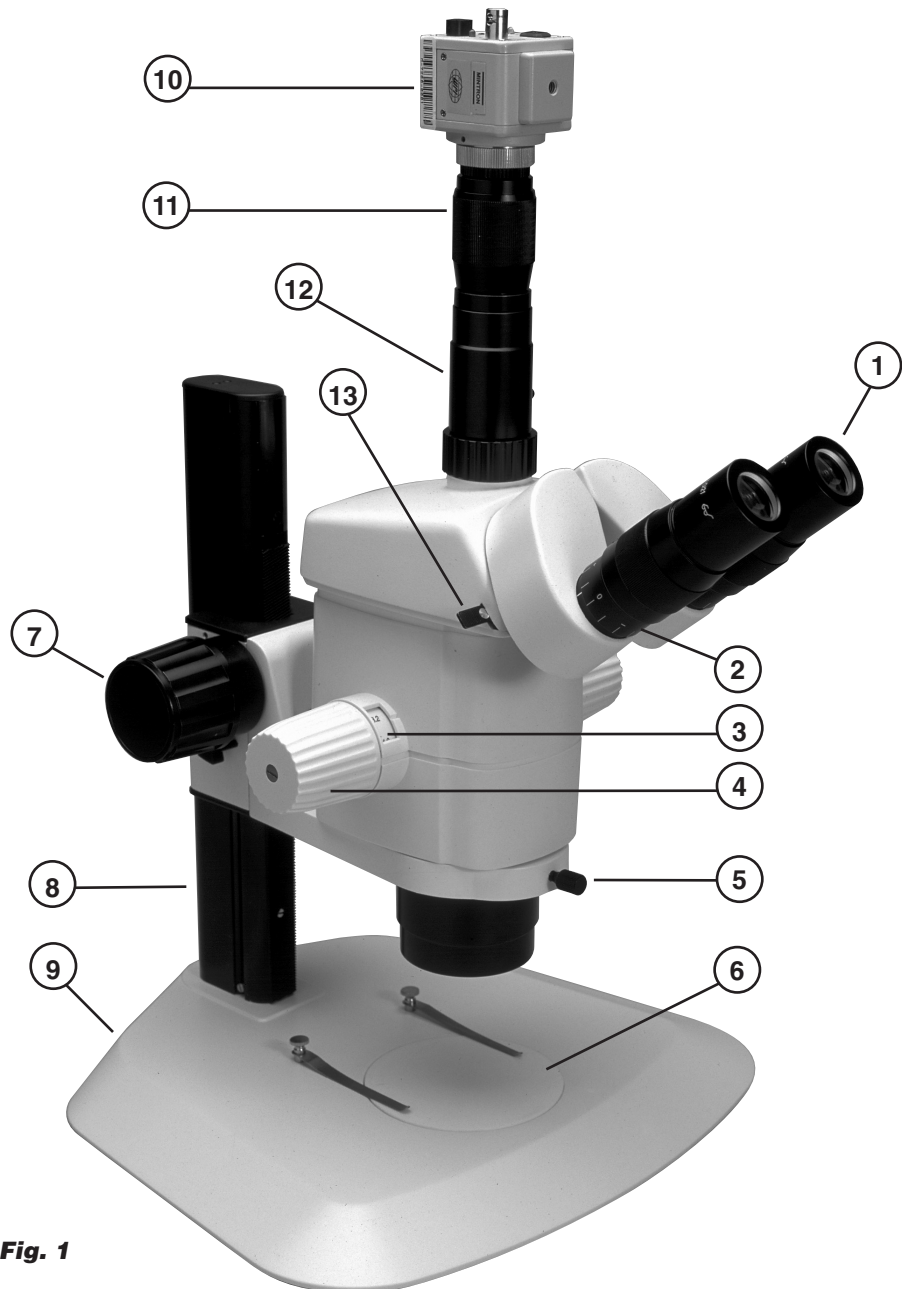
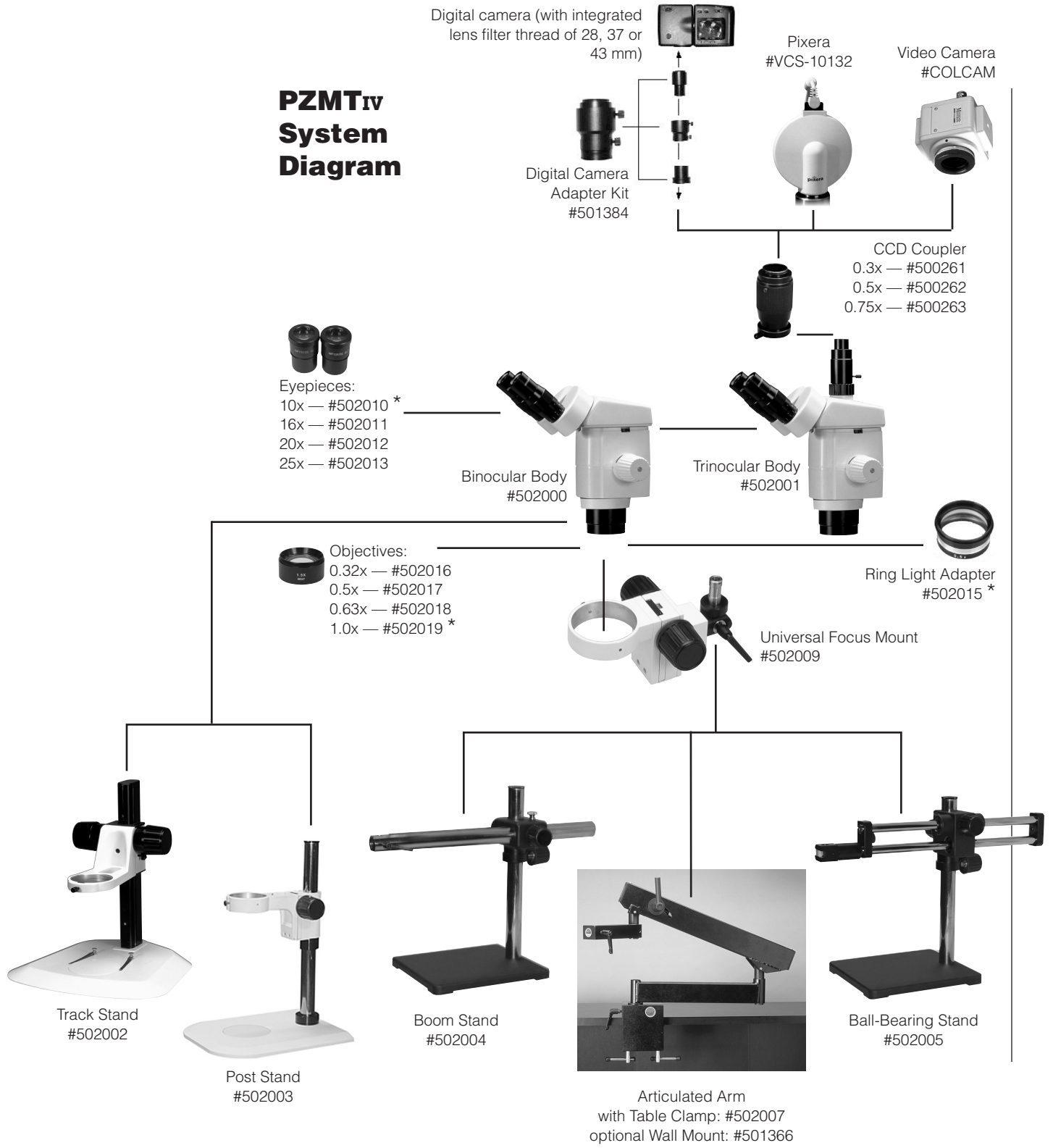


Fig. 1



PZMIV & PZMTIV

PZMTIV System Diagram



* Included with body.



PZMIV & PZMTIV

Specifications

| | |
|-------------------------------|--|
| EYEPIECES..... | WFH 10x (two), standard; WF 15x, 20x, 25X, optional |
| OBJECTIVE | 1x |
| OBJECTIVES (optional)..... | 0.3x, 0.4x, 0.5x, 0.75x, 1.5x, 2x |
| ZOOM RANGE | 0.62x - 5x |
| TOTAL MAGNIFICATION..... | 6.2x - 50x |
| FIELD OF VIEW | Ø 33.9 MM - Ø 4.2 MM |
| WORKING DISTANCE | 80 mm |
| BINOCULAR TUBE..... | Inclined 45° |
| INTERPUPILLARY DISTANCE | Adjustable 50-75 mm |
| DIOPTRER ADJUSTMENT | ±5 Diopter (both eyepiece tubes) |
| MICROSCOPE BODY..... | Rotatable 360° |
| AUXILIARY LENSES | |
| Total magnification..... | 1.9x - 125x |
| Biggest Field of View | Ø 106 mm |
| Working Distance..... | 80-296 mm |

PZMIV & PZMTIV Eyepieces and Objectives

| Objective | 10x Eyepiece | | 16x Eyepiece | | 20x Eyepiece | | 25x Eyepiece | | Working Distance |
|------------|--------------|-----------------------------|--------------|-----------------------------|--------------|-----------------------------|--------------|-----------------------------|------------------|
| | Mag | Field (mm) (Video Field) | Mag | Field (mm) (Video Field) | Mag | Field (mm) (Video Field) | Mag | Field (mm) (Video Field) | |
| 0.32x | 1.9x - 16x | 106 - 13.1 (49.8 - 6.1) | 3.2x - 25.6x | 70.6 - 8.8 (49.8 - 6.1) | 3.9x - 32x | 55.4 - 6.9 (49.8 - 6.1) | 5x - 40x | 45.4 - 5.6 (49.8 - 6.1) | 296 mm |
| 0.5x | 3.1x - 25x | 67.7 - 8.4 (31.8 - 3.95) | 5x - 40x | 45.2 - 5.6 (31.8 - 3.95) | 6.2x - 50x | 35.5 - 4.4 (31.8 - 3.95) | 7.8x - 62.8x | 20 - 3.6 (31.8 - 3.95) | 187 mm |
| 0.63x | 3.9x - 31.5x | 53.8 - 6.7 (25.3 - 3.15) | 6.2x - 50.4x | 35.8 - 4.4 (25.3 - 3.15) | 7.8x - 63x | 28.2 - 3.5 (25.3 - 3.15) | 9.8x - 78.8x | 23 - 2.9 (25.3 - 3.15) | 149 mm |
| 1.0x (inc) | 6.2x - 50x | 33.9 - 4.2 (15.9 - 1.97) | 9.9x - 90x | 22.6 - 2.8 (15.9 - 1.97) | 12.4x - 100x | 17.7 - 2.2 (15.9 - 1.97) | 15.5x - 125x | 14.5 - 1.8 (15.9 - 1.97) | 80 mm |

The Video Field is based on a 1/2-inch CCD (8 mm diagonal) and a 0.5x camera adapter.



Operation

Refer to *Figure 1* on page 3 and system diagram on page 4 along with the following instructions on normal operation.

1. Set Up Microscope on Track Stand

Mount the microscope head into the focus mount. Use focusing knob to bring microscope to focus.

2. Interpupillary Distance Adjustment

Looking through the eyepieces with both eyes, adjust the interpupillary distance by sliding the two eyepiece tubes with both hands until a single image is observed.

3. Focus Adjustment

Place a sample under the microscope, turn magnification knob (4) to its greatest setting (5.0). Focus the image by turning the focusing knob (7). Once image is in clear focus at its highest magnification you may zoom out to lower magnification by adjusting magnification knob (4) while remaining in focus.

4. Diopter Adjustment

If image does go out of focus when zooming out, zoom to the lowest setting and focus each eyepiece individually by adjusting the diopter adjustment ring (2).

5. Video/Photo Applications

Slide the light path selector bar (13) to the "PHOTO IN" position in order to direct the light to the video/photo port (12). Remove the protective cap on top of the video/photo port. Slip and secure the body of C-mount CCD camera Coupler (11) over the video/photo port, with its focus ring facing back. Attach C-mount video or digital camera (when using cameras with an integrated lens filter thread of 28, 37 or 43 mm, Digital Camera Adapter Kit #501384 is required). Refer to camera's manual for connecting camera to monitor. Focus image on screen by adjusting the fine focus ring located at the back of the C-mount CCD camera coupler (11).



Maintenance

This instrument should be kept in a cool, dry place free from direct sun, dust, alkali and acid fumes as well as moisture.

Do not disassemble any of the lenses since they have all been properly aligned at the factory. The glass surfaces of the lenses should be cleaned with lens tissue or brushed with a soft camel-hair brush. Any dust which has fallen on lens exterior surfaces may be blown away with a commercial grade clean dust spray.

If stains deposit on exterior surfaces of the lenses, clean them gently using a mild soap solution with a lint free cloth. Industrial solvents should not be used since they may penetrate to the inside of the lens components and dissolve the lens cement.

When cleaning and lubricating the mechanical parts, special attention must be taken not to stain the optical surfaces with grease. The moveable mechanical parts should be lubricated occasionally with a non-corrosive grease.

When not in use, remove the eyepieces and put them back into the lens box. Replace them with the eyepiece tube dust covers. The microscope should then be secured in its box or covered with a dust cover.



Appendix: Boom Stand Assembly



- 1.** Remove all parts from box
- 2.** Unscrew hex screw from Vertical Post. Vertical post should have cross block attached to it.
- 3.** Screw Vertical Post and Base together using hex screw. (Insert screw from bottom of base, into threaded section of vertical post)
- 4.** Insert Horizontal Bar into opening in cross block, slot side facing up.

Two different types of focusing assemblies are available:

E-arm

- 1.** Remove E-arm from protective packaging
- 2.** Insert E-arm into the end of the Horizontal Bar, secure by tightening set screw.
- 3.** Tighten one or both hex screws (2.5 mm and 4 mm) so the microscope head is tiltable but not free to swing.



Tips

E-arm can be inserted from the TOP, BOTTOM or END of the Horizontal Bar.

For oblique viewing, set E-arm up at various angles and then tighten handle.



Warranty

WPI (World Precision Instruments, Inc.) warrants to the original purchaser that this equipment, including its components and parts, shall be free from defects in material and workmanship for a period of one year* from the date of receipt. WPI's obligation under this warranty shall be limited to repair or replacement, at WPI's option, of the equipment or defective components or parts upon receipt thereof f.o.b. WPI, Sarasota, Florida U.S.A. Return of a repaired instrument shall be f.o.b. Sarasota.

The above warranty is contingent upon normal usage and does not cover products which have been modified without WPI's approval or which have been subjected to unusual physical or electrical stress or on which the original identification marks have been removed or altered. The above warranty will not apply if adjustment, repair or parts replacement is required because of accident, neglect, misuse, failure of electric power, air conditioning, humidity control, or causes other than normal and ordinary usage.

To the extent that any of its equipment is furnished by a manufacturer other than WPI, the foregoing warranty shall be applicable only to the extent of the warranty furnished by such other manufacturer. This warranty will not apply to appearance terms, such as knobs, handles, dials or the like.

WPI makes no warranty of any kind, express or implied or statutory, including without limitation any warranties of merchantability and/or fitness for a particular purpose. WPI shall not be liable for any damages, whether direct, indirect, special or consequential arising from a failure of this product to operate in the manner desired by the user. WPI shall not be liable for any damage to data or property that may be caused directly or indirectly by use of this product.

Claims and Returns

- Inspect all shipments upon receipt. Missing cartons or obvious damage to cartons should be noted on the delivery receipt before signing. Concealed loss or damage should be reported at once to the carrier and an inspection requested. All claims for shortage or damage must be made within 10 days after receipt of shipment. Claims for lost shipments must be made within 30 days of invoice or other notification of shipment. Please save damaged or pilfered cartons until claim settles. In some instances, photographic documentation may be required. Some items are time sensitive; WPI assumes no extended warranty or any liability for use beyond the date specified on the container.
- WPI cannot be held responsible for items damaged in shipment en route to us. Please enclose merchandise in its original shipping container to avoid damage from handling. We recommend that you insure merchandise when shipping. The customer is responsible for paying shipping expenses including adequate insurance on all items returned.
- Do not return any goods to WPI without obtaining prior approval and instructions (RMA#) from our returns department. Goods returned unauthorized or by collect freight may be refused. The RMA# must be clearly displayed on the outside of the box, or the package will not be accepted. Please contact the RMA department for a request form.
- Goods returned for repair must be reasonably clean and free of hazardous materials.
- A handling fee is charged for goods returned for exchange or credit. This fee may add up to 25% of the sale price depending on the condition of the item. Goods ordered in error are also subject to the handling fee.
- Equipment which was built as a special order cannot be returned.
- Always refer to the RMA# when contacting WPI to obtain a status of your returned item.
- For any other issues regarding a claim or return, please contact the RMA department

** Electrodes, batteries and other consumable parts are warranted for 30 days only from the date on which the customer receives these items.*

Warning: This equipment is not designed or intended for use on humans.

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